913.791
Har

MUSEUM OF NORTHERN ARIZONA

Bulletin 26

WOODCHUCK CAVE

A Basketmaker II Site in Tsegi Canyon, Arizona

By

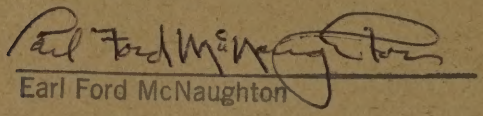
H. CLAIBORNE LOCKETT and LYNDON L. HARGRAVE

Edited By

HAROLD S. COLTON and ROBERT C. EULER

Published by the Northern Arizona Society
of Science and Art, Inc.
Flagstaff, Arizona
1953

Collection of Native North American Indian Books, Historical Books, Atlases, plus other important authors and family heirloom books.
As of 12-31-93



Earl Ford McNaughton

MUSEUM OF NORTHERN ARIZONA

Bulletin 26

To Chuck —
Sure you will
learn a great
deal from this
Clay

WOODCHUCK CAVE

A Basketmaker II Site in Tsegi Canyon, Arizona

By

H. CLAIBORNE LOCKETT and LYNDON L. HARGRAVE

Edited By

HAROLD S. COLTON and ROBERT C. EULER

Published by the Northern Arizona Society
of Science and Art, Inc.
Flagstaff, Arizona
1953

Copyright 1953

by the

Northern Arizona Society of Science and Art, Inc.

FOREWORD

In the summers of 1933 and 1934, Lyndon Lane Hargrave, then field director of the Museum of Northern Arizona, was invited by Mr. Ansel Hall to lead archaeological parties of the Rainbow Bridge - Monument Valley Expedition in the Tsegi Canyon area. In the first year, 1933, an archaeological survey was the major project while during 1934 several small archaeological sites were excavated. Among these Woodchuck Cave, a Basketmaker II site, proved to be most important. Mr. Hargrave selected the site and assigned the leadership of the actual digging to Mr. Claiborne Lockett who was ably assisted by other members of the Rainbow Bridge - Monument Valley Expedition. After the summer in the Tsegi Mr. Lockett returned to the Museum at Flagstaff and began an intensive study of the material culture preparatory to the publication which had been arranged by Mr. Hall. In the midst of the work Mr. Lockett was called to a position in the Bureau of Indian Affairs and the Museum was unable, at the time, to make provision to continue the work. For eighteen years the notes have been in the files of the Museum. Two years ago I took them out and looked them over. Feeling that the results were very important, and since the literature contains few accounts of pure Basketmaker II sites, should be published even though in abbreviated form, I edited them and prepared a report. This report I gave to Mr. Robert C. Euler to further edit and to check all the artifacts. This he has done in a very careful and painstaking manner. This paper, therefore, is not now the work of one person. Four have had a hand in it: Hargrave, who selected the site; Lockett, who supervised the excavation; Colton, who compiled the report; and Euler, who edited it. As Lockett has done the most work on the material I have assigned him the position of senior author but the other three have given the work many hours of their time. Furthermore, the following individuals have been most cooperative in contributing special skills: A. C. Whitford, Fiber Processors, Clearwater, Florida, made fiber identifications; Volney Jones, University of Michigan, vegetable identifications; Cecil Williams, U.S. Biological Survey, and W. C. Russell who identified mammal remains; J. Grinnell, Museum of Vertebrate Zoology, University of California, ornithological identifications; and R. S. Heineman, University of Arizona, mineral identifications. Ralph Teall, M.D., Mayo Clinic, Rochester, Minnesota, prepared notes for the section dealing with human skeleton remains and pathology and Katharine Bartlett analyzed the basketry fragments. Other sections, including the comparative data, were prepared by the editors.

All specimens, field notes and photographs from the Woodchuck Cave excavation are located at the Museum of Northern Arizona and are available to interested archaeologists.

Flagstaff, Arizona
December 18, 1952

Harold S. Colton
Director

This edition is limited to 700 copies.

TABLE OF CONTENTS

	Page
Foreword	iii
Chapter I - Introduction	1
Chapter II - Excavation of the Cists	3
Chapter III - Human Skeletal Remains	12
Chapter IV - Objects of Material Culture	15
(A) Basketry	15
(B) Fur Robes	17
(C) Sandals, Cordage, and Other Woven Objects	17
(D) Vegetable Food Remains	20
(E) Animal Remains	20
(F) Mineral and Stone Objects	23
(G) Wooden Objects	26
(H) Clay Objects	28
(J) Comparative Data	28
Chapter V - Conclusions	31
Bibliography	32
Index	33

Chapter I

INTRODUCTION

While investigating pithouse sites in the Tsegi Canyons in the summer of 1934, members of the Rainbow Bridge - Monument Valley Expedition discovered a previously unreported Basketmaker burial cave. This cave, situated high in the cliff wall of Water Lily Canyon, a branch of Dogoszhi Biko, is immediately above Twin Caves Pueblo, a large Pueblo III site investigated by the Expedition in 1933. The Basketmaker cave may be clearly seen from the approach to Twin Caves but because of its forbidding position some six hundred feet above the canyon floor apparently never before had been scientifically investigated. Its discovery was the result of a Sunday climb by some of the more daring members of the Expedition who worked out two routes up the cliff to the cave. The more hazardous parts of both routes were found to have had hand-and-toe holes pecked into the cliff, evidence that the trails were used in prehistoric times.

Woodchuck Cave (N.A. 3112)[1] is a shallow arch over 70 feet in width and varying in height from approximately 4 feet at the eastern end to 10 feet at the west. The depth from the extreme back of the cave to the end of the overhang is about 32 feet. The surface of the western section of the cave at the time it was discovered was covered by windblown sand from which projected a number of large boulders, while at the eastern end the sand was shallow and bed rock was exposed in several places. The back wall of the cave was covered with green moss indicating that moisture seeped through the rock at certain seasons. A detached human humerus with dried flesh attached projecting from the sand at the western extremity of the site, and a few scattered sherds gave surface indication that man had used the shelter.

Some of these sherds indicated an early period (Pueblo I) and it was decided to investigate the cave more thoroughly. Assisting L. L. Hargrave, then field director of the Museum of Northern Arizona and leader of the archaeological party of the Rainbow Bridge expedition, and H. Claiborne Lockett in the excavation of the cave were Messrs. White, Goodspeed, Ben W. Wetherill, Clifford Bond, and Charles B. McKee. Excavation demonstrated that the cave was used primarily for burial purposes, not for habitation, during Basketmaker II times, and the artifacts recovered were similar to those from other Basketmaker II sites in the lower San Juan drainage and southern Utah.

1. The cave was named for woodchuck bones found in Cists No. 1 and 15, probably the first record of this mammal in Arizona.

Fig. 1. Woodchuck Cave, N. A. 3112, appears on the skyline at the right side of the picture. Twin Caves pueblo lies below the cliff, mostly in shadow.

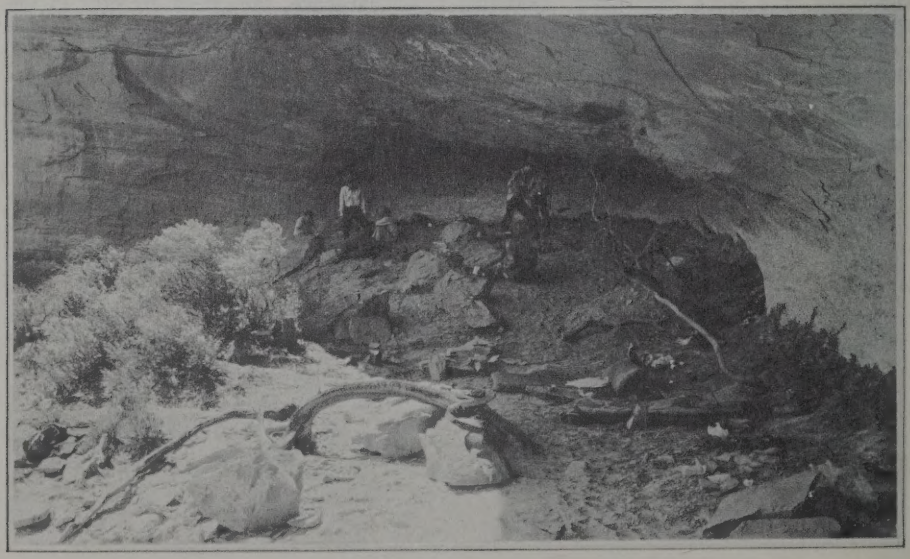


Fig. 2. N. A. 3112, Woodchuck Cave, before excavation.

Chapter II

EXCAVATION OF THE CISTS

Excavation of the cave exposed a number of cists, some of which were slab lined. In the description of each of these that follows they are numbered from one to sixteen.

Cist No. 1

Irregular sandstone slabs lined a roughly rectangular excavation, 2 feet deep and measuring 22 inches by 49 inches. At the bottom of the cist the body of a young female lay on its back, the legs flexed together and the feet extending forward horizontally. The knees of this burial were bleached white, a fact, together with the discovery that the patellas were missing, which indicated that the body had been for some time at least partially exposed. The bottom of the cist contained clean sand over which had been placed a layer of shredded juniper bark which extended up on all sides around the burial. In the region around the head some large and badly disintegrated fragments of coiled baskets were encountered. These were somewhat scattered and led to the belief that the material had once, subsequent to interment, been excavated and then redeposited in the cist. The basketry fragments (which will be described later) were similar to those previously reported from Basket Maker II sites including a few pieces which, on both surfaces, were dyed or, more likely, painted a shade of wine red. Over the body extending from the neck to the waist were found fragments of fur cord, undoubtedly the remains of a fur robe. Mixed with the robe fragments were tufts of small bird feathers which were wrapped around a yucca fiber cord similar to that which formed the base for the fur cord. These feathers were probably used as an edge decoration for the robe. On either side of the proximal ends of the two humeri were found woodchuck mandibles. Just opposite the center of the left humerus and at the same level were the badly rotted remains of a buckskin bag which contained paint pigments--malachite and malachite admixed with azurite. Touching the bag on the north was a piece of psilomelane, a hydrous oxide of manganese. Immediately in front of the left foot was a small piece of red hematite, one surface of which had been ground down for paint. In front of the right foot were two halves of a Western Horned Owl feather. In the fill below the feet was a fragmentary yucca cord sandal. The body itself was partially dehydrated; from the hips down the skin was still attached to the skeleton, while the upper part was devoid of skin covering. The following data were recorded concerning the arrangement and occurrence of the bones. The body was oriented north-south, with the head to the south. The cranium, some of the hand bones, and the first two cervical vertebrae were missing. The right humerus was disarticulated and found in the extreme southeast corner of the cist six inches above the body level. The right second rib was translocated behind the cervix. Another factor indicating a disturbed burial was the discovery in this cist of an extra navicular. Perhaps a number of cists were opened coincidentally and when they were refilled some of the bones were mixed.

Cist No. 2

Approximately two feet north of Cist No. 1 another cist was encountered. This was very shallow, and humal skeletal remains were located at a depth of two inches. This recess was not slab lined but merely an excavation about 12 inches into the sand of the cave floor. The pit was roughly circular, measuring 4-1/2 feet in diameter, and had originally been lined with shredded juniper bark. On the east side was found the well-preserved,

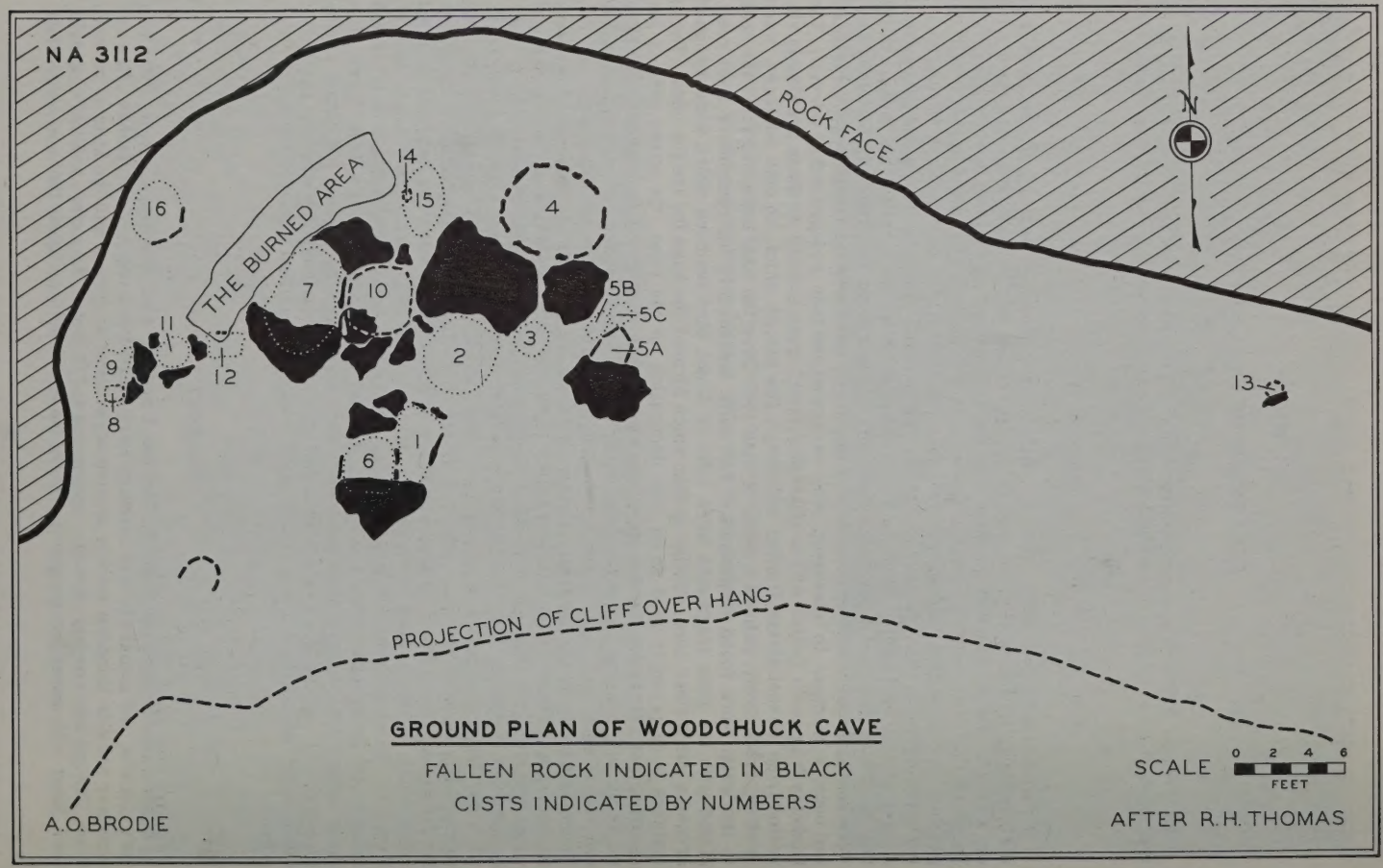

NA 3112
ROCK FACE
N
THE BURNED AREA
14
15
16
4
7
10
5B
5C
5A
11
3
2
9
12
13
8
6
1
PROJECTION OF CLIFF OVER HANG
GROUND PLAN OF WOODCHUCK CAVE
FALLEN ROCK INDICATED IN BLACK
CISTS INDICATED BY NUMBERS
SCALE
0 2 4 6
FEET
A.O.BRODIE
AFTER R.H. THOMAS

Fig. 3. One of the headless "mummies" excavated in Woodchuck Cave.

dehydrated body of an adult male, which had been wrapped over the legs and hips with a rabbit fur robe. The body lay on its back, head to the south, with the legs drawn up together, and the knees lying on the chest. The feet were crossed, left over right, and both pointed east. The arms extended naturally down the side of the body. Over the ankle region had been placed a flat, tray-shaped, coiled basket which had been lined with red clay. Under the right scapula were the remains of a skin bag containing 5 small sticks and a perforated stone disc. Two inches north of this bag were two bone beads and a stone pipe. In Cist No. 2, in addition to the large dehydrated body were parts of two more individuals. These were very much disturbed and, although most of the bones were found in the west side of the cist, it was impossible to determine their original location since some were beside, above, or below the main body. This probably indicates that the large body was buried later than the other two. The main skeleton was intact with the exception of the head and the first and second cervical vertebra; the other two bodies were also without skulls or long leg bones (femurs, tibias, and fibulae). It would seem then that these burials were not rifled for jewelry as had been thought, but for their crania and large leg bones. In this cist, as in the first encountered, were thousands of pupa cases which made it appear that either these bodies had been deposited some time after death or that they were originally buried at a shallow depth and exposed soon after interment so that flies had a chance to deposit their eggs. Above the feet of the large body two detached feet were found. These were covered on top by rectangular pieces of antelope skin which extended over the top of the foot and down over the toes. Here the skin was decomposed and it was impossible to ascertain if it had been attached to a sole. Numerous other artifacts were scattered through the grave: fragments of yucca cord and string, fur cord, grass matting, human hair string and cord, loose tufts of human hair, and more than 500 lignite beads some of which still were strung on the original yucca cord. With these were 5 olivella beads that had been spaced in the necklace, each one between some 50 black beads. In the same necklace were two larger lignite beads and a pendant of the same material. It seemed strange to the authors that if grave-robbers were searching for jewelry alone, they would overlook this beautiful necklace.

Cist No. 3

Adjoining Cist No. 2 on the northeast was another cist excavated into the fill of the cave floor. This one was quite small, measuring 20 by 24 inches. In it were the partial remains of a very old woman. The body lay on its back with the head to the east and the left lower arm and hand lying across the chest. The hand, radius, and ulna were detached from the humerus which was missing. In this grave, as in the others, the cranium was also missing, nor were the leg bones and feet in evidence. Actually, all that remained of this individual was a lower left arm, some ribs and vertebrae. No juniper bark lining was found in this cist but it was noted that here, as in Cist No. 5 (described below) the sand under the body to a depth of some 2 inches was saturated with a yellow substance, the nature of which could not be determined.

Cist No. 4

Some 4 feet north of Cist No. 2 another slab-lined pit was unearthed. This was roughly circular, 6 feet in diameter and 2 feet deep, and filled to a depth of approximately one foot with charcoal, sand, and mountain sheep droppings. At this depth in the southwest corner of the pit were found the broken fragments of an unfired clay pipe.

Cist No. 5

About 3 feet directly east of Cist No. 3 a fifth cist was uncovered. This had been excavated into the sandy floor of the cave and then lined on three sides by large sandstone slabs and on the south side by a massive sandstone boulder that had exfoliated at some

earlier date from the cave roof. This cist was roughly 18 inches square; appended to it were two smaller excavations. All were without burials, but scattered through the sand fill were fragments of coiled basketry, yucca leaf knots, 13 squash seeds, a small part of a badly rotted yucca cord bag, and an abundance of shredded juniper bark. The bottom of the excavation was saturated with the same yellow material noted for Cist No. 3. It could not be determined whether this cist was constructed principally for storage or burial purposes.

Cist No. 6

Six inches west of Cist No. 1 was a circular depression with a diameter of 2-1/2 feet. This cist was 18 inches deep and was lined on the east, west, and north sides by large sandstone slabs set on edge; on the south side was a large sandstone boulder. Originally the pit had been dug so that the burial extended about one foot under this rock. The first six inches of the fill had been disturbed. In the cist were fragments of a square-toe yucca cord sandal, coiled basket fragments, a large "hank" of black human hair, and the bottom of a badly worn coiled basketry tray on which was a skin bag painted blue. Several chunks of moss which had been used to line the burial, many gourd seeds and fragments of gourd shell, an abundance of yucca and human hair cord and string, shredded juniper bark, and several human teeth, both adult and baby, were also recovered. Below this 6 inch level the ground was little disturbed and the objects recovered were in the same relative position in which they had originally been placed. Lying across the cist with the head to the west lay what remained of an adult female. The cranium, right arm and hand, and leg bones were missing, but the remaining bones showed that the body had been buried on its back with the arms extending down the sides. The legs had either been flexed and laid on the chest, or placed so that the heels touched the buttocks as were the remains in Cist No. 1. This position could be assumed without the presence of the legbones because the ankle and toe bones were found just in front of the pelvis. At the same level and near the left shoulder of the adult was an infant burial; the feet of the baby touched the left humerus of the woman. This burial was oriented with the head to the northwest and was wrapped in a very badly decayed rabbit fur robe. Lying on the chest of the baby was a single horn bead. Above the lower left arm of the woman and resting directly on it was another baby oriented and wrapped in the same fashion as the other. These were both small babies who probably had died at birth or very shortly thereafter. Above the right shoulder of the adult a portion of a third infant cranium was uncovered. In this region, probably in association with this baby, were 50 acorn beads which had been strung on a two-ply twisted yucca cord, while scattered through the sand around the neck of the adult skeleton were 125 olivella shell beads. Just to the left of where the adult head had been was a small coiled basket which contained a set of gaming dice, beads and a large piece of soft red hematite. Below the pelvis was a pair of square-toe yucca cord sandals; between the sandals were the badly decayed remains of a woven bag made of human hair string (this disintegrated when touched with a camel hair brush). Near the left wrist of the adult and partially below the second baby, was a yucca string bag with a simple red band design. Inverted above the upper part of the adult and extending over parts of the first two babies was a very large (ca. 2 feet in diameter), shallow coiled basket. This basket, by far the largest found, was pitch lined. Another coiled basket (flat and approximately one foot in diameter) was inverted over the abdominal region of the adult.

Cist No. 7

Six feet northwest of Cist No. 6, was a seventh cist. This was egg-shaped and measured 6 feet by 3-1/2 feet. The burials lay at a depth of 2-1/2 feet. This pit had been excavated between two large sandstone slabs which formed the north and south sides. On the east the slab walls of Cist No. 10 (described below) served as a third side, while on the west, although no definite slab walls were traceable, some loose rock probably originally served this purpose. The large rock on the south side contained a natural curvature

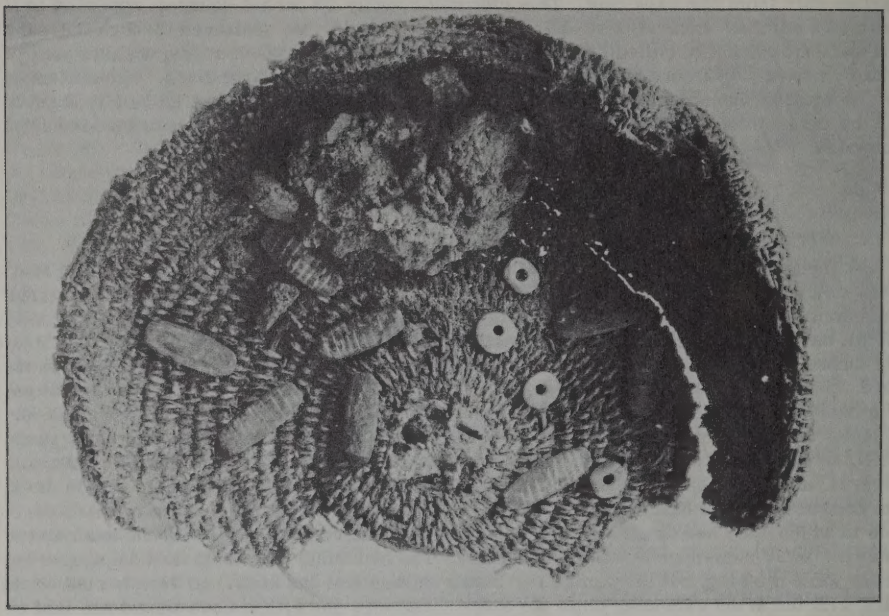


Fig. 4. Basket (from Cist #6, showing gaming dice and shell beads (3112/B6.25).

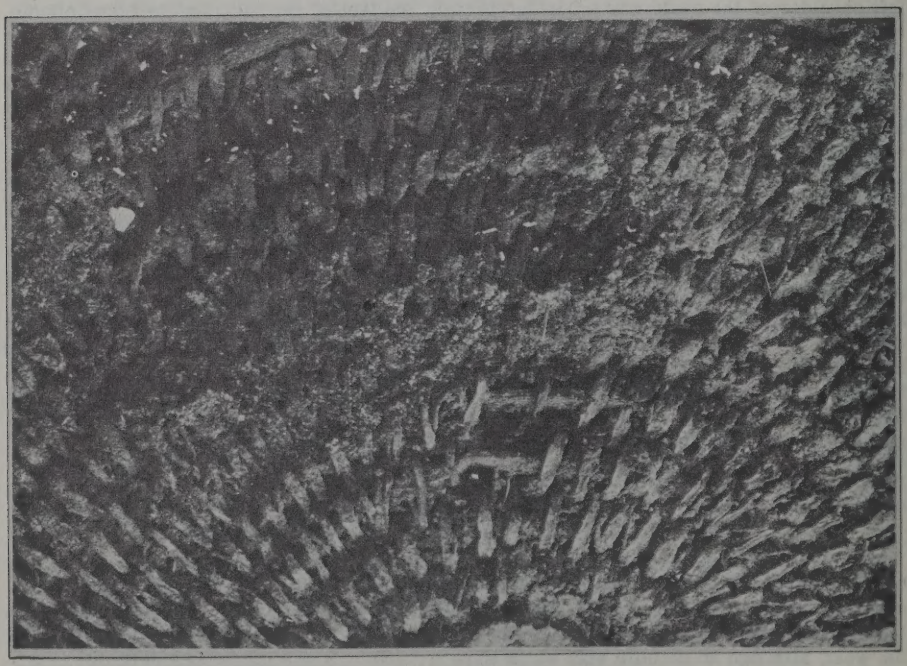


Fig. 5. Detail of same basket (3112/B6.25), showing construction.

similar to that which occurred in Cist No. 6, and was utilized in the same manner (i.e., the heads of the bodies were placed under it). When excavation was begun in this area, a few burned human bones were encountered. It was not determinable, however, due to the disturbed condition of the upper 18 inches of fill, if this represented an intentional cremation or merely additional subsequent depredations.

Since the fill had been deranged it could only be assumed that the artifacts encountered originally came from this cist. Therefore no attempt has been made to do other than record the material obtained. On the surface, and very probably part of the many burned bones found in the large burned area of the cave surface (see ground plan), were numerous fragments of charred human adult bones. Objects recovered from the cist itself were: several lignite beads strung on a two-ply twisted yucca cord; a small pendant of shale, red on one side and white on the other; fragments of fur robe and small ornamental bird feather tassels (?); fragments of sandals and coiled basketry; whole dried plants and corn cobs; yucca fiber cord; an olivella shell bead; a fragment of wine-colored coiled basket similar to that found in Cist No. 1; a lump of grey pigment composed of organic material and lime, to which adhered particles of skin from its original wrapping; fragments of a yucca cord bag, grass fiber matting, human hair string and cord; an antelope-hair brush; adult upper teeth, scattered adult and child bones; a short awl, an abundance of juniper bark which probably had been lining for the original cist, a round stone ball, a small paint mano of igneous rock, a pink paint pigment (sandstone and quartz grains with a cement of calcite), an obsidian drill point, a green stone pendant drilled on both ends; a piece of tanned buckskin; a small fiber brush; a yucca leaf knotted with a reef knot; a fragment of feather apparently used in dart shafting (it was split down the center and was about the right length); one wooden die; white paint pigment, a white mineral (fibrous calcite), grey pigment (quartz grain cemented with manganese dioxide); a second bone awl (scapula, mountain sheep?), a bone awl blank (Cannon bone, mountain sheep); a piece of red hematite; a piece of impure lime; yellow paint (limonite); and a yucca fiber cord bag with a design in red.

At the 18 inch level the skeletons were found lying side by side. They were oriented with the heads to the south, and lay on their backs with arms extending along the sides. The one on the east, that of an old man, had the knees drawn up and resting directly on the chest. The other, that of a young girl about 18, was buried with the knees perpendicular to the body, and the heels together in front of the pelvis. In these burials, as in the others, the crania were missing although the mandibles remained. Extending across the floor of the stone arch under which the heads had rested was a long sandstone slab on which the heads had undoubtedly been pillowed; on this slab were bunches of shredded juniper bark. Underneath the bodies was a padding of moss such as still adhered to the back wall of the cave. Behind the head region of both skeletons were two wooden hair ornaments or combs, incrusted on one end with bone beads. Above the left shoulder of the male skeleton 4 flaked points and 6 flaked drills and scrapers were uncovered. Above the head were parts of two atlatls broken into sections about 7 inches long. It is probable that they were broken before being placed in the grave. Fragments of a broken atlatl were also uncovered above the head of the woman. These, however, were in loose fill and could not be positively associated with the woman. Several bone beads were scattered through the ribs of the female burial and between the two bodies were three small egg-shaped stones of different colors, one red, another white, and the third orange-red. The use of these stones is problematical although they are sometimes referred to as medicine stones (similar stones are carried in medicine pouches by the Navaho). Careful brushing around the head region of the body on the east revealed, against the right side of the mandible, a stone pipe. This pipe differed from the one found in Cist No. 2 in that a large bone bead was cemented over the intake orifice. On the chest of the female burial were several small animal mandibles. These consisted of a pair of pocket gopher mandibles, a pair of spotted skunk mandibles and one mandible of a prairie dog. On the chest of the adult male were two large lignite pendants, while just above the left scapula of this body were the remains of a badly disintegrated yucca cord bag. In this bag were 210 squash seeds, one acorn, a piece of red pigment (hematite), a piece of white pigment (fibrous calcite), a green pigment (malachite), a stone ball (about the size and shape of a golf ball and covered with green paint), a few strands of human hair, and what appeared to be a

small fiber brush. Directly beneath the bag was a small piece of unidentified black pigment which had probably also been included with the contents of the pouch. The bag itself rested on a matting of shredded juniper bark. Removal of the skeleton on the west revealed 4 lignite button beads under the lowest left rib. Between, and two inches below, the two bodies was the base of a 5 inch coiled basket. This contained traces of black and green pigments.

Cist No. 8

Nine feet southwest of Cist No. 7 another cist was uncovered. This was very small, less than one foot in diameter, yet quite definitely a cist. It was lined with small flat sandstone slabs and contained a few scattered, partially burned bones, again apparently not a definite cremation, but similar to those found all through the burned area shown on the map. Of this burned material only three vertebrae, part of a left clavicle, and the mandible of an adult male were found. Inside the latter was a piece of gypsum. Beneath the burned material was a matted mass of yucca fiber, two bunches of grass, and a quantity of shredded juniper bark, all of which rested on a two inch layer of bunchgrass stems. The presence in the fill of a red bean[2] and the relative position of this cist (see below) indicated somewhat later construction than others at the site.

Cist No. 9

The fill in the bottom of Cist No. 8 was relatively soft and a test excavation six inches below its floor exposed the right humerus of an adult female. In uncovering this skeleton it was necessary to remove the slabs forming the walls of Cist No. 8, and it became apparent that it had been superimposed on an older cist, designated No. 9. This was not slab lined but, as in Cist 2, was a shallow excavation into the fill of the cave floor. The burial it contained had also been disturbed and only scattered bones, in advanced stages of decay, remained. The mandible, the only bone which was in a fair state of preservation, indicated that it probably belonged to an old woman. Near the southern extremity of the grave was the mandible of a cottontail rabbit. Just north of the human mandible were six stone and one bone pendants; these apparently had not been disturbed but were aligned much as they might have been strung around an individual's neck.

Cist No. 10

Adjoining Cist No. 7 on the east was a tenth cist, roughly circular, approximately four feet in diameter, and lined with huge sandstone slabs. Its depth was 26 inches. In the southwest corner, extending over the top of the depository was a large sandstone boulder which had subsequently fallen from the roof. This cist was also disturbed and its original contents were indeterminable; excavation merely revealed a great mixture of objects apparently dumped in to refill the hole. Interfused with sand, charcoal, shredded juniper bark and seeds, pinyon nuts, sheep droppings, twigs, and roots were the following specimens of archaeological interest (no attempt is here made to note their exact location as they were definitely scattered): Parts of three bodies were found in the fill--one an adult female, another a child less than ten years old, and the third a baby of less than six months; fragments of fur cord and feather ornaments probably incorporated in the fur robe; a Western Horned Owl feather; kernels of yellow and red corn, a corn cob, squash seeds; a bone tubular bead, the tip of a conus shell bead, an olivella shell bead; a piece of hematite with a smoothed edge, a piece of yellow ochre paint; coiled basketry fragments dyed wine-red (similar to those from Cist No. 1);[3] a yucca cord sandal fragment, yucca leaves knotted with reef knots; hanks of black and grey human hair, human hair cord and string, a human hair woven carrying band, and a yucca string cord.

2. Bean missing from collections, therefore unidentifiable--Ed. note.
3. The discovery of wine-red dyed basketry in Cist Nbrs. 1 and 10 perhaps indicates that a number of burials were disturbed at the same time, then later either redeposited at random, or burned in the rear of the cave.

Cist No. 11

Twelve inches east of Cist No. 8, and separated from it by a large boulder, Cist No. 11 was found. This small depression measured approximately one by one and a half feet, one foot deep, and was excavated into the fill between four large irregular sandstone boulders. Upon excavation it was found to contain only a few scattered bones of a very young baby while the bottom and sides had been lined with shredded juniper bark. In this cist, as in the others, definite signs of pilferage were in evidence.

Cist No. 12

Cist No. 12 was located at the eastern edge of one of the large sandstone boulders which formed Cist No. 11. It contained only scattered shreds of juniper bark which probably had once lined its walls.

Cist No. 13

In the extreme eastern section of the cave, and far removed from the others, another small slab-lined cist was located. This had at one time been used as a fire pit since it contained charcoal and ash.

Cist No. 14

Cist No. 14, very small, was similar to Cist No. 8. It was located above the disturbed surface of Cist No. 15 and was almost filled with decomposed grass stems. This also appeared to have been constructed by a later culture.

Cist No. 15

Below Cist No. 14 a large, well-defined excavation was disclosed. This cist was not slab lined, but, as in Nbrs. 2, 7, and 9, merely dug into the sand of the floor. The fill was deranged to a depth of 12 inches. Fragments of two baby skeletons and one adult were mixed through the sand and in this material the following objects were revealed: a cylindrical stone object, two worked pieces of wood (which may have been atlatl fragments), many fragments of coiled basketry, a piece of braided juniper rope, yucca fiber string and cord, fur robe fragments, the radius of a mountain sheep, a split antelope toe bone, charcoal, and sheep droppings. One foot below this disturbed area a burial was uncovered. The individual, of undetermined sex, lay on its back with the head to the south. This burial had also been robbed, but still in place were most of the vertebrae, sacrum, pelvis, ribs, sternum, two feet, lower right arm and hand, and the left humerus. The remainder of the bones, including the cranium and long bones of the legs, were missing. Following are the associations and identification of the recovered objects: at a point where the left hand would have been was a horn flaking tool and a bone awl; immediately left of the left foot were three woodchuck mandibles; under the right hand, a paint mano or polishing stone; between the right hand and the right foot, a small red chert pendant; left of the left heel, three dart points. The cist had originally been lined with shredded juniper bark and, after removing the body it was seen that the bottom was paved with flat sandstone slabs and covered with moss.

Chapter III

HUMAN SKELETAL REMAINS

Location	Burial Number	Sex	Approx. Age	Remarks
Cist #1	1	F	25-40	Xiphoid process not fused. External sex organs visable. Definite marginal lippings of vertebral bodies revealed hypertrophic arthritis.
Cist #2	2a	M	50	Small pelvic opening. Ribs 7, 8, 9 and 10 showed advanced carteligenous growth. Non-flaring ischium and iliac. Neck of left humerus showed deformity probably indicative of an old fracture.
Cist #2	2b	M	25+	Non-flaring ischium and iliac. Lippings of vertebral bodies showed arthritis.
Cist #2	2c	F	25+	Flaring ischium and iliac. Lippings of vertebral bodies showed arthritis.
Cist #3	3	F	50+	Bones relatively smooth and slight. Sternum very thin in comparison to other skeletons from the same site. Xiphoid process fused. Lippings of vertebral bodies revealed arthritis of the thoriasic vertebrae.
Cist #6	6a	F	25-40	Sciatic notch rounded, pubic arch flat, sub-pubic arch almost a 90^0 angle. Bones relatively smooth.
Cist #6	6b		1-	Infant.
Cist #6	6c		1-	Infant.
Cist #6	6d		1-	Infant.
Cist #7	7a	M	50+	Xiphoid process fused. Non-flaring ischium and iliac. Arthritis deformens of thoracic and lumbar vertebrae and of tarsal region. Complete fusion of first and second cuneiform; navicular almost fused with second and third cuneiform, which showed excessive lipping. Cuboid and all metatarsals of right foot showed lipping on proximal ends. Cavity in ramus of sternum perhaps indicative of a trephine opening for relief of heart pain. Proximal end of left fibula revealed abnormal spiny process, 3/8 inches in length. Teeth showed aggrevated abrasions and infection by pyorrhea.
Cist #7	7b	F	18	Distal end of femur and proximal end of humerus not closed. Flaring iliac, broad sacrum, wide pelvic opening. Teeth indicated no pyorrhea and no abrasion; right third molar partially encapsulated in bone; extensive caries in both right and left second molars.[4]

4. No incisors from mandibles recovered at N.A. 3112 were "shovel-shaped."

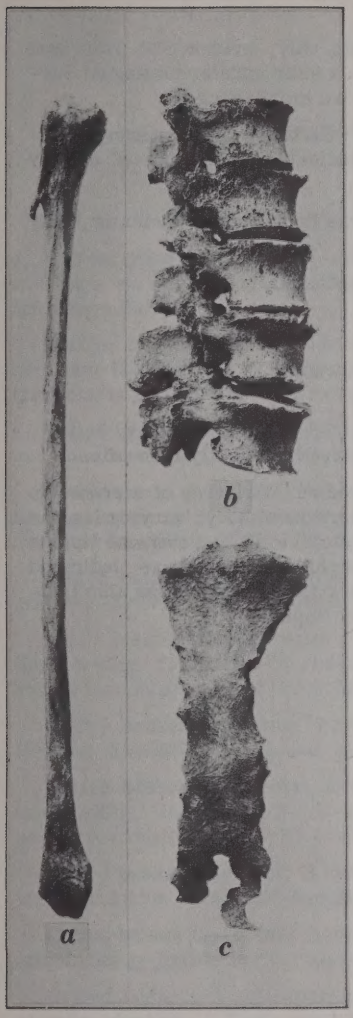


Fig. 6. Pathological Indications, Burial 7a. (a) spiny process on left fibula; (b) vertebral lipping; (c) possible trephine opening in sternum.

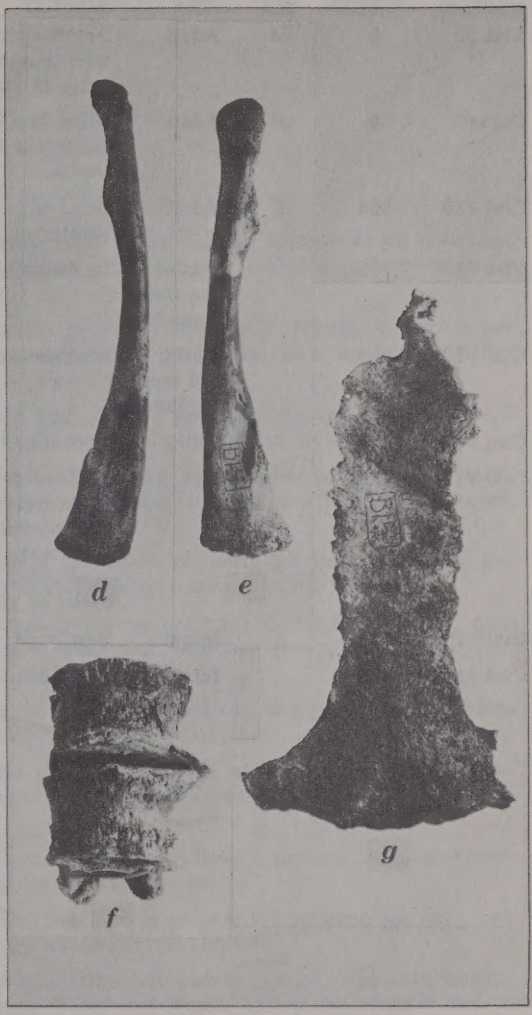


Fig. 7. Pathological Indications, Burial 15a. (d,e) clavicle variance; (f) vertebral lipping; (g) twisted sternum.

Location	Burial Number	Sex	Approx. Age	Remarks
Cist #8	8	M	Adult	Detached mandible only; evidence of pyorrheal infection. Small alveolar nodules on lingual surfaces of 2nd and 3rd molar sockets.
Cist #9	9	F	Adult	Disturbed burial with many bones missing. Mandible and teeth indicated probability of elderly female.
Cist #10	10a	F	Adult	Head of femur less than 45 mm. Remains badly scattered.
Cist #10	10b		Infant, less than 6 months	Remains badly scattered.
Cist #10	10c		Child, less than 10 years	Remains badly scattered.
Cist #11	11		Infant	Probably died at birth or shortly thereafter.
Cist #15	15a		50+	Xiphoid process fused. Twisting of sternum in youth caused distortion of body; varying lengths and thicknesses of clavicles and extreme lipping on right side of lumbar vertebrae indicated scoliosis. Severe arthritis deformens also indicated by vertebral lippings.
Cist #15	15b		Infant	New born.
Cist #15	15c		Infant	New born.

Chapter IV

OBJECTS OF MATERIAL CULTURE

(A) Basketry

A great many fragments of baskets were found in the fill, but because of the disturbed condition, no whole specimens were recovered. The following analysis has been made by Katharine Bartlett:

Bottom of a coarse coiled basket; whole, narrow yucca leaf stitching, 4 stitches per cm., non-interlocking; 2 coils per cm.; foundation 2-rod-and-bundle triangular; stitches irregularly placed, exposing foundation. (3112/B6.18)

Coiled basket fragment, dyed purplish-red; 3 coils per cm.; stitches slanting, 5-1/2 per cm., non-interlocking; foundation 2-rod-and-bundle triangular. (3112/B1.6.7a)

Very coarse coiled basket fragment; 2 coils per cm.; 2 stitches per cm., non-interlocking, some split; foundation 2-rod-and-bundle triangular; stitches irregularly placed, exposing foundation. (3112/B1.6,7b)

Coiled basket fragment, fine and tightly woven; 2-1/2 coils per cm.; 4 stitches per cm., non-interlocking; foundation 2-rod-and-bundle triangular. (3112/B1.6,7c)

Small fragment of a coarse coiled basket; 3 coils per cm.; 4 stitches per cm., non-interlocking; foundation 2-rod-and-bundle triangular; stitches irregularly placed, exposing foundation. (3112/B1.6,7d)

Coiled basket fragment; 3 coils per cm.; stitches vertical, 4-5 per cm., non-interlocking; foundation 2-rod-and-bundle triangular. (3112/C10,14)

Coiled basket fragments; 2-1/2 coils per cm.; stitches slanting, 3-4 per cm., non-interlocking; foundation 2-rod-and-bundle triangular; stitches irregularly placed, exposing foundation. (3112/B7.46a)

Coiled basket fragment; 3 coils per cm.; stitches slanting, 5 per cm., non-interlocking; foundation 2-rod-and-bundle triangular. (3112/B7.46b)

Coiled basket fragment; tightly woven, 3-1/2 coils per cm.; 4 stitches per cm., non-interlocking; foundation 2-rod-and-bundle triangular. (3112/B2)

Coiled basket; 3 coils per cm.; stitches fine but widely spaced, non-interlocking, slightly slanting, 4-5 per cm.; foundation 2-rod-and-bundle triangular, rods 2 mm. in diameter; stitches irregularly placed, exposing foundation. (3112/B1)

Coarse coiled basket; 3 coils per cm.; stitches non-interlocking, slightly slanting 5 per cm.; foundation 2-rod-and-bundle triangular (bundle the thickness of single yucca leaf), and rods 2 mm. in diameter. (3112/B6.26)

Coarse coiled basket; 3 coils per cm.; stitches non-interlocking, some split, slightly slanting, 4 per cm.; foundation 2-rod-and-bundle triangular, rods 2 mm. in diameter. (3112/B6.15)

Coiled basket fragments with coarse foundation and fine sewing elements loosely constructed; 3 coils per cm., non-interlocking stitches, irregularly placed, exposing foundation; foundation 2-rod-and-bundle triangular, rods 1-1.5 mm. in diameter. (3112/B7.10)

Coiled basket, coarse; 3-1/2 coils per cm.; stitches slanting, some split, 4 per cm., non-interlocking, irregularly placed, exposing foundation; foundation 2-rod, 1-1/2 mm. in diameter. (3112/B6.14)

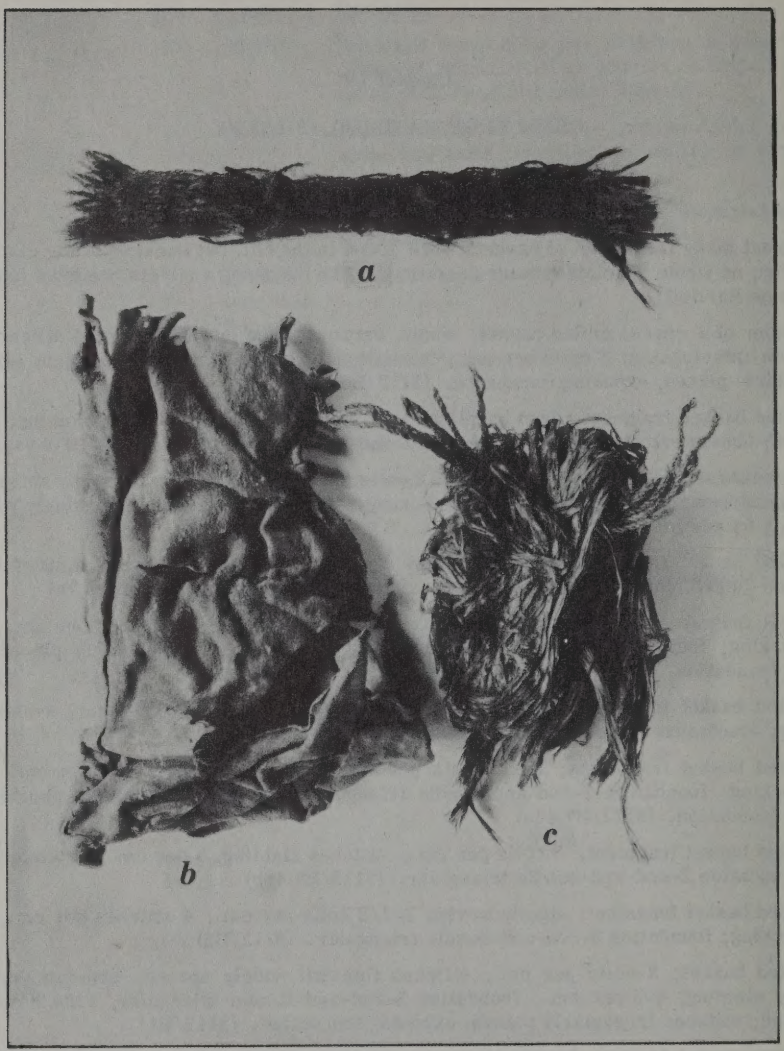


Fig. 8. (a) human-hair, twined carrying strap (3112/C10.32); (b) skin bag, sewn originally with yucca cord but mended with human-hair cord (3112/B6.37); (c) juniper bark apron with human-hair cord belt (3112/B7.57). Greatest length of b, 17.7 cm.

Coiled basket, fine; 3 coils per cm.; stitches vertical, some split, 4 per cm., non-interlocking; foundation 2-rod-and-bundle triangular. (3112/B6.14a)

Coiled basket, coarse; 2-3/4 coils per cm.; stitches vertical, non-interlocking; foundation 2-rod-and-bundle triangular. (3112/C15.17)

Bottom of coiled basket containing 8 wooden dice and lump of red (hematite) paint; 3 coils per cm.; stitches slanting, many split, non-interlocking, 4 per cm., irregularly placed, exposing foundation; foundation 2-rod-and-bundle triangular. (3112/B6.25)

It is evident from the above descriptions that nearly all the baskets were of 2-rod-and-bundle triangular construction with narrow yucca leaf, non-interlocking stitches. The sole variant was a specimen constructed with a simple 2-rod foundation (3112/B6.14). Some baskets were pitch-covered on the inner side. A number of fragments found in burials 1, 7, and 10 were dyed red on both exterior and interior (after construction), and it appears that they are the remains of a single basket that had been broken when the cave was disturbed and the pieces redistributed. No baskets were decorated in any other manner.

(B) Fur Robes

In all the Woodchuck Cave burials individuals were either wrapped in or covered with rabbit fur robes. The robes of babies were finer textiles, softer and more closely woven than those of adults.

The fur string was produced by wrapping twisted yucca fiber cords with thin strips of rabbit skin. The end of one strip was caught under and held in place by the next strip. This wrapping made the hair stand out in all directions and produced a very soft and "fuzzy" cord. In rare instances prairie dog skin was used in small quantities and the yucca cords thus wrapped were so included in the finished robe as to give a spiral effect of light and dark fur. Tassels and edgings were sometimes produced by wrapping soft bird skin or feathers around yucca cord. (This should not be confused with the feather robes common in later, pueblo periods.)

(C) Sandals, Cordage, and Other Woven and Fiber Objects

The majority of sandals recovered were too fragmentary to permit description. One, however, (3112/B6.20) was of yucca cord, 20 warps, square-toed, and with human hair tie cords.

Cordage was spun from yucca, human hair, and juniper bark; all was of 2-ply construction. One specimen (3112/C10.32) which was made of human hair cord appeared to be a twined carrying strap. It consisted of 18 strands of 2-ply brown hair cord, was 2.2 cm. wide, 10 cm. long, and frayed on both ends.

Several fragments of yucca fiber bags (3112/B6.32; B7.38; B7.39) with very fine warp and twining elements were recovered but unfortunately these also were too minute for detailed examination.

A number of yucca leaves knotted together with square and reef knots were in the fill.

An apron (3112/B7.57) composed of a flat strip of juniper bark folded over a human hair cord was obtained. There were 8 strands of 2-ply cord and the apron was tied under the bark with 3 strands of the same cord.

One object (3112/B7.29) which may have been an umbilical pad, was constructed of Ponderosa Pine bark, the surfaces of which were wrapped in juniper bark.

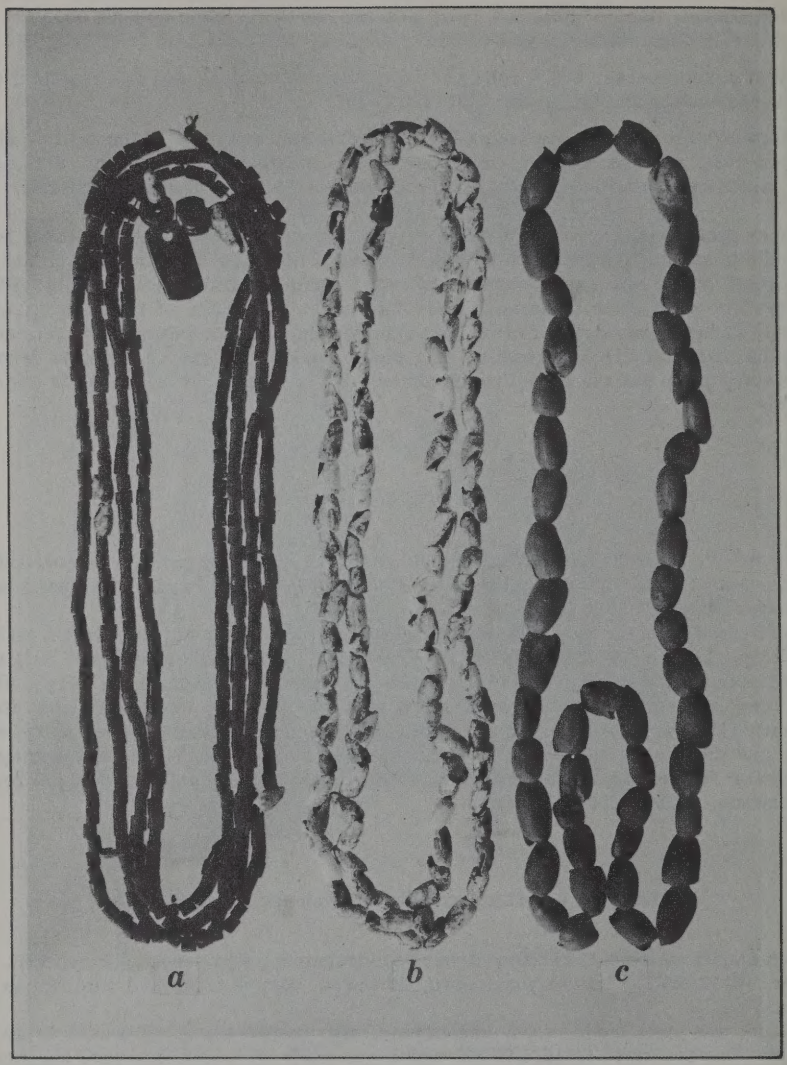


Fig. 9. Three necklaces. (a) lignite (3112/B2.4); (b) olivella shell (3112/B6.1); (c) acorn (3112/B6.8).

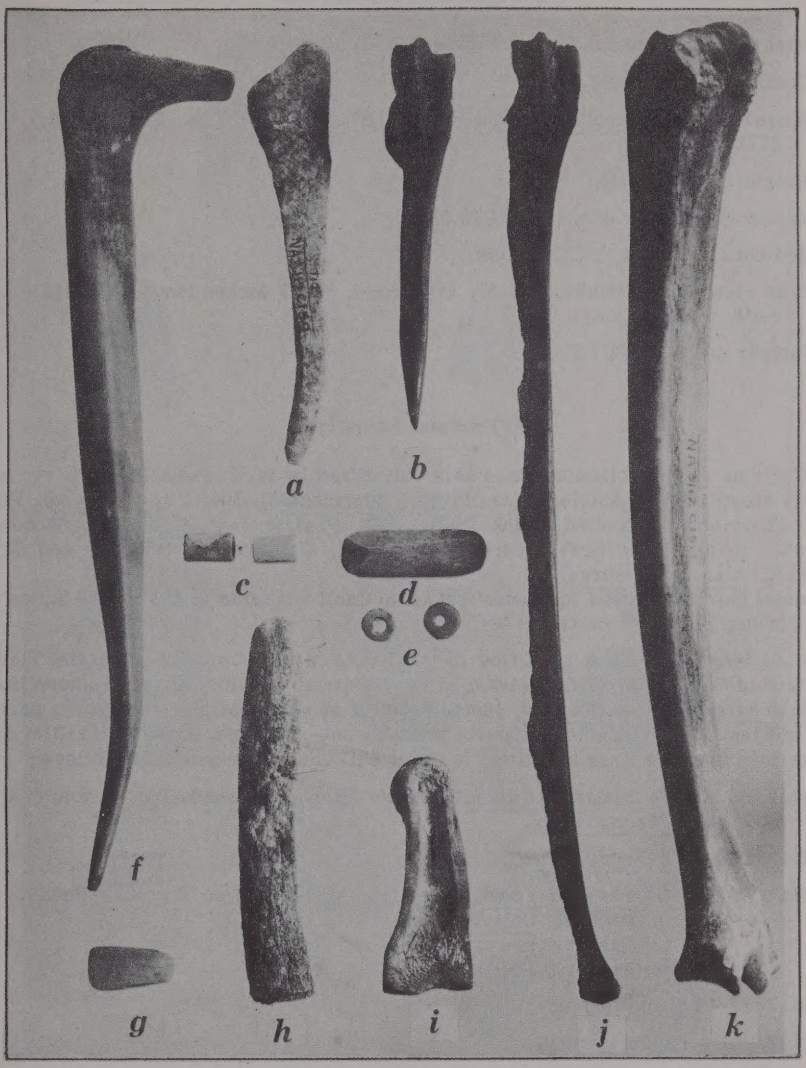


Fig. 10. Bone and Horn Implements. (a,b,f) awls (3112/C15.9; B7.26; B7.27); (c) tubular beads (3112/B6.4; C10.7); (d) die (3112/B2.10); (e) beads (3112/B2.10); (g) pendant (?) blank (3112/M2); (h) horn flaking tool (3112/C15.7); (i) split antelope toe bone (3112/C15.8); (j) worked mountain sheep cannon bone (3112/B7.28); (k) smoothed mountain sheep radius (3112/C15.1). Length of f, 17.3 cm.

(D) Vegetable Food Remains

Vegetal remains consisted of:

Gourd rinds (3112/B6.22).

Squash seeds, cucurbita moschata,[5] (3112/B7.37; 3112/B7.24; 3112/B6.28; 3112/C10.4).

Acorns (3112/B7.24).

Yellow corn, 2 kernels, (3112/C10.2).

Red corn, 1 kernel, (3112/C10.3).

Corn cobs (3112/C10.29, C15.5): (a) 8 rows, 2-1/2 inches long; (b) 12-13 rows, 4 inches long.

Juniper seeds (3112/C10.28).

(E) Animal Remains

(1) Portions of the following mammals, identified by W. C. Russell, were recorded: Mountain sheep (Ovis), Antelope (Antilocapra americana), Grey Fox (Urocyon), Pocket Gopher (Thomomys), Spotted Skunk (Spilogale), Prairie Dog (Cynomys), Woodchuck (Marmota), (perhaps the first record for Arizona), Cottontail (Sylvilagus) and Ground Squirrel (Citellus grammurus).

Mammal hair, submitted for identification to Cecil Williams of the United States Biological Survey, proved to be rabbit (Sylvilagus. sp.).

(2) Bird fragments were identified by J. Grinnell, Museum of Vertebrate Zoology, University of California, and consisted of the following: Feather of the Western Horned Owl, Bubo virginianus pallescens, (some doubt of sub-species), (3112/B1.10); part of a turkey tail feather, Meleagris gallopavo, probably sub-species merriami, (3112/M.1).

Other bird feathers were submitted to Cecil Williams who reported as follows:

3112/B6.30 - definitely Galliformes, suborder Galli, reasonable assurance that it is Turkey (Meleagridae).

3112/C10.6 - Passeriformes.

3112/B7.43 - (a) Passeriformes, either Corvidae (crow) or Turdidae (thrush).
(b) Probably Galliformes.
(c) Passeriformes.
(d) Probably Galliformes.

3112/B2 - Passeriformes.

3112/C16 - Passeriformes.

(3) At Woodchuck Cave the following species of marine mollusk shells were represented:

Conus - 3112/B6.5 (fragment), 3112/B10.19 (a bead).

Olivella - 3112/B10.9 (bead), 3112/B6.1 (necklace).

(4) Objects of bone included:

Awl, mountain sheep scapula, 17.3 cm. in length (3112/B7.27).

Awl, mountain sheep cannon bone, 7.8 cm. in length (3112/B7.26).

Awl, 8.7 cm. in length (3112/C15.9).

5. Identified by Volney Jones. See also Carter, 1945, p. 20.

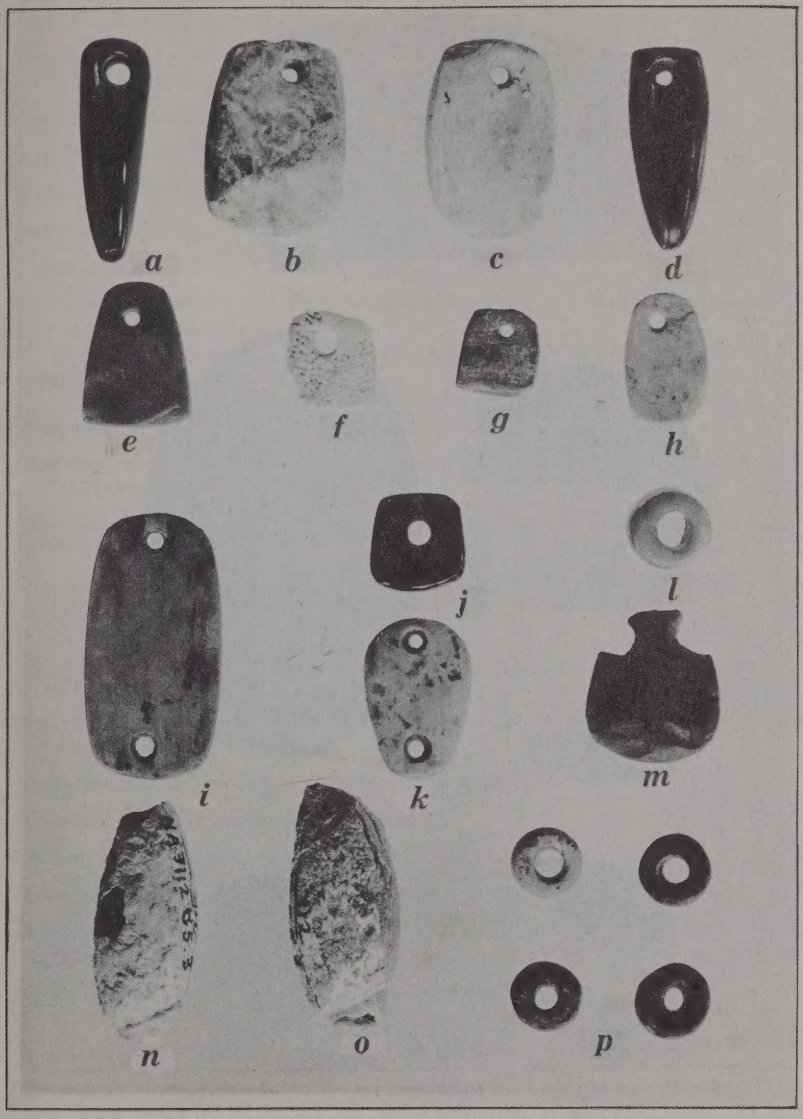


Fig. 11. Pendants and Beads. (a-h) 3112/B9.2; (i-l, p) 3112/B7.41; (m) 3112/C15.11; (n-o) 3112/B5.3.

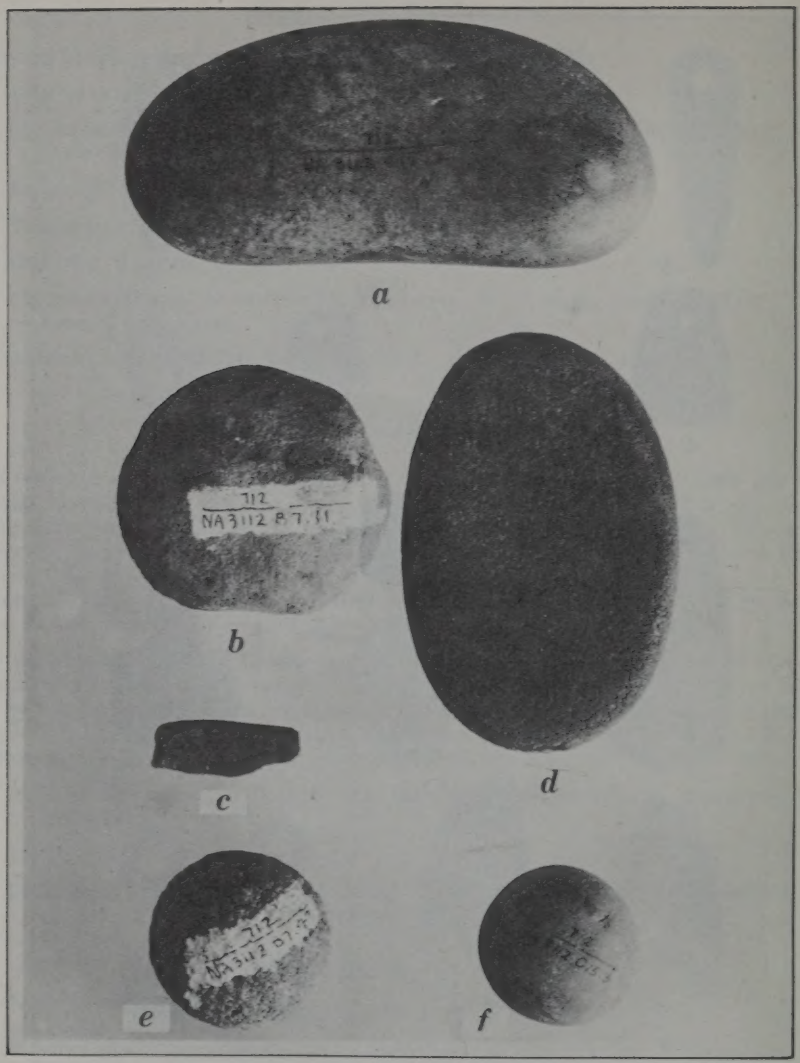


Fig. 12. Stone Objects. (a) polishing stone (3112/C15.2); (b) green sandstone pigment (3112/B7.11); (c) hematite (3112/B1.5); (d) small paint mano (3112/B7.48); (e,f) circular stone balls (3112/B7.47; C15.3). Length of a, 12 cm.

Worked mountain sheep cannon bone, use unknown, 19.8 cm. in length (3112/B7.28).

Mountain sheep radius which had been smoothed on one side, use unknown, 19.4 cm. in length (3112/C15.1).

Antelope toe bone, split, 4.8 cm. in length, use unknown (3112/C15.8).

1 die, 2.9 cm. in length (3112/B2.10).

2 beads (3112/B2.10).

Pendant (?) blank, 1.8 cm. in length (3112/M2).

Tubular beads (3112/B6.4, 3112/C10.7).

It will also be remembered that the two hair combs and the stone pipe found in Cist No. 7 had bone beads attached.

Only two horn artifacts were in evidence: a flaking tool, 8 cm. in length (3112/C15.7), and a bead (3112/B6.3).

(5) Skin objects were represented by:

Skin bag which was stained green inside from malachite which it once contained, (3112/B6.37).

Skin pouch fragment sewed up side with yucca cord running stitch, seam inside, (3112/B7.7).

Fragment of a third skin bag which originally contained three mineral pigments, (3112/B1.11).

(F) Mineral and Stone Objects

Minerals consisted of the following, identified by R. S. Heineman, mineralogist at the University of Arizona:

Psilomelane, a magnesium dioxide mineral, (3112/B1.3).

Malachite, copper carbonate, (3112/B1.4).

Hematite (sequi-oxide of iron), one surface smoothed, (3112/B1.5).

Blue pigment, malachite, with some admixed azurite, (3112/B1.12).

Fine grained quartz sand cemented with dark limonite (hydrous oxide of iron), (3112/B1.23).

Gray pigment from skin bag; organic material with some lime and phosphate, (3112/B7.2).

White mineral, fibrous calcite (calcium carbonate), (3112/B7.5).

Gray paint stone, fine quartz grains cemented with manganese dioxide, (3112/B7.16).

Red pigment, hematite, (3112/B7.30).

Red pigment, hematite, (3112/B7.31).

Violet pigment, sandstone with calcite cement, (3112/B7.32).

White pigment, impure lime, (3112/B7.33).

Gray pigment, mixture of lime and manganese dioxide, (3112/B7.34).

Yellow pigment, limonite, (3112/B7.36).

Blue pigment, turquoise (hydrous phosphate of aluminum and copper), (3112/B7.45).

White pigment, gypsum (calcium sulphate), (3112/M.9).

Green pigment, sandstone, (3112/B7.11).

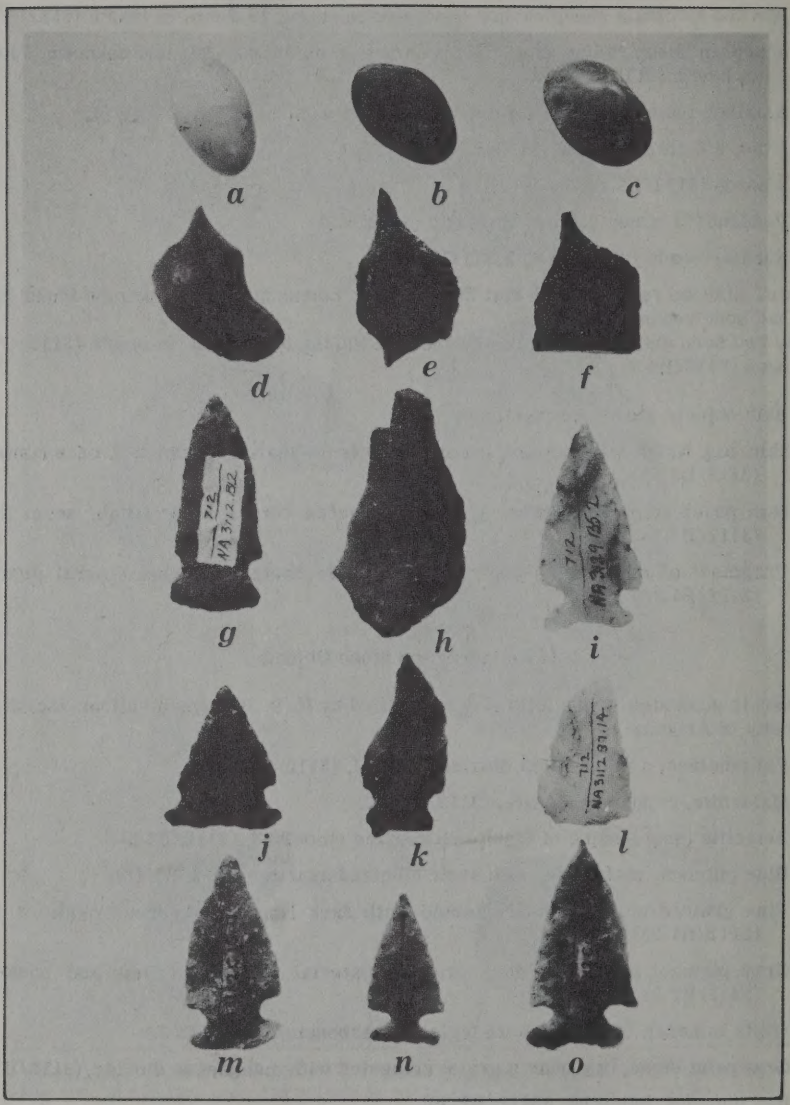


Fig. 13. Stone Objects. (a-c) polishing stones (3112/B7.25); (d-f) drills (3112/B7.15); (h) scraper (3112/B7.15; (g, i-o) dart points (3112/B1.2; B5.2; B7.14; C15.11).

Fig. 14. Pipes from Woodchuck Cave. (a) stone with bead cemented to mouth (3112/B7.44; (b) stone (3112/B2.6); (c) unfired clay (3112/C4.1).

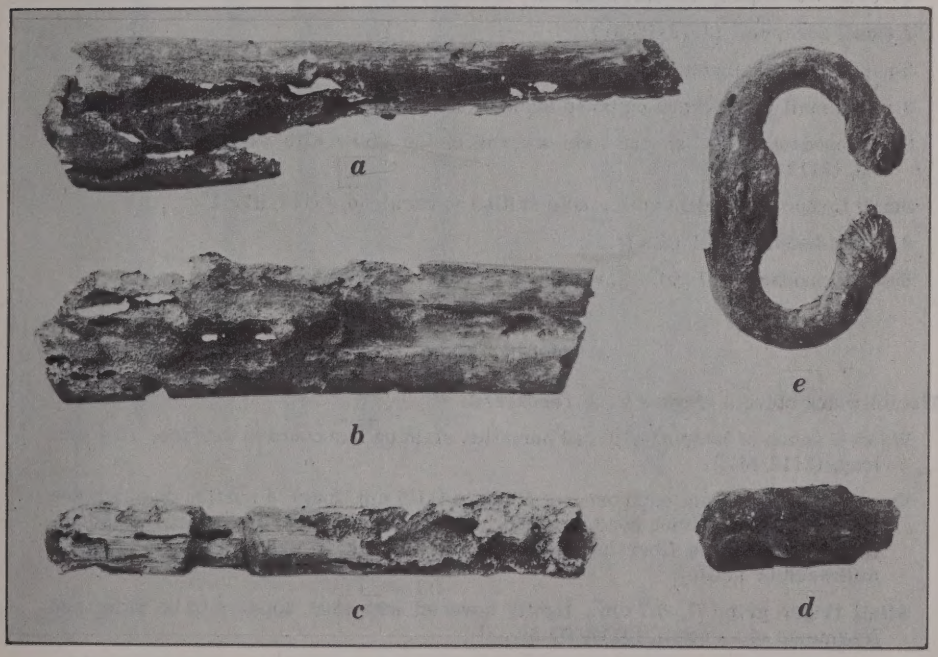


Fig. 15. Fragments of Wood. (a-d) atlatl fragments (3112/B2.3); (e) possible atlatl finger grip (3112/B2.3).

Stone artifacts were:

Stone disc pendant or spindle whorl, (3112/B2.13).

Stone tubular pipe with bead in end, ground and polished, (3112/B7.44).

Stone tubular pipe, ground and polished, (3112/B2.6).

Lignite necklace, (3112/B2.4).

Scraper (?), (3112/C15.11).

2 obsidian drills, (3112/B7.15).

3 dart points, (3112/C15.11).

Dart point, (3112/B7.14).

Dart point, (3112/B5.2).

Dart point, (3112/B1.2).

Polishing stone, oval, 12 cm. long, (3112/C15.2).

Polishing stone, broken in half, (3112/C10.30).

Small paint mano, oval, 6.7 cm. long, showing traces of hematite, (3112/B7.53).

Small paint mano, oval, 9.7 cm. long, showing trace of hematite, (3112/B7.48).

Circular stone ball, 4.1 cm. diameter, (3112/B7.47).

Circular stone ball, 3.6 cm. diameter, (3112/C15.3).

2 small scrapers, (3112/B7.15).

2 partially broken points, (3112/B7.14).

3 very small water-worn polished stones, (3112/B7.25).

Shale pendant, white on one side and red on the other with a hole drilled in each end, (3112/B7.41).

Small turquoise pendant with a hole drilled in each end, (3112/B7.41).

8 lignite beads, (3112/B7.41).

8 small pendants of lignite, turquoise and shale, (3112/B9.2).

(G) Wooden Objects

The following objects of wood were recovered:

Wooden scoop of juniper with red hematite stain on the concave surface, 16.4 cm. long, (3112/M.8).

Wooden hair ornament composed of 5 sticks (11.5 cm. long), a portion of which are skin covered and fiber cord wrapped, giving the whole the appearance of a comb, (3112/B2.13). The fiber has been identified as agave with some admixture of milkweed or nettle.[6]

Atlatl finger grip (?), 5.7 cm., tightly covered with what appears to be skin; and fragments of an atlatl, (3112/B2.3).

Small stick, 5.6 cm., partially wrapped with yucca cord, of unknown use, (3112/M.5).

Small fragments of worked wood, also possibly from an atlatl, (3112/C15.4).

Small fragments of worked wood, also possibly from an atlatl, (3112/B7.20).

6. Personal communication from A. C. Whitford, fiber technologist, Fiber Processors, Clearwater, Florida.

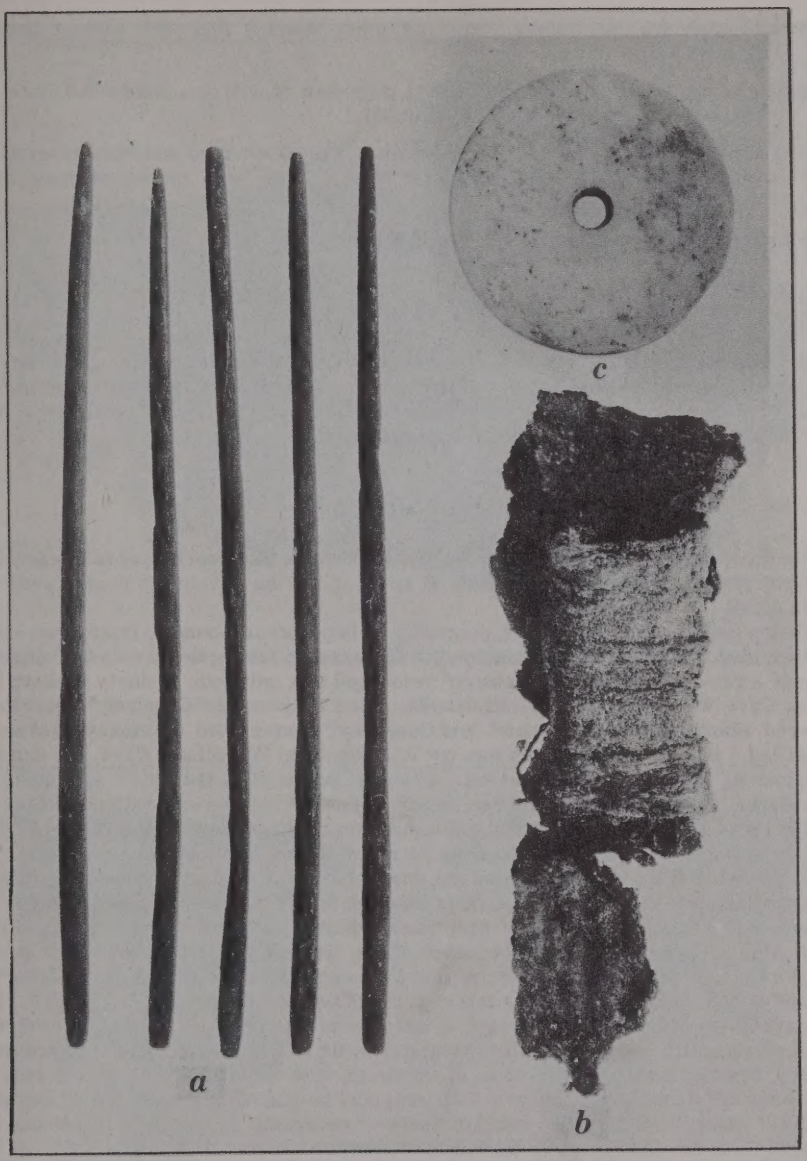


Fig. 16. (a,b) wooden hair ornament (3112/B2.13); (c) stone pendant or spindle whorl (3112/B2.13).

Wooden die, 3.8 cm., same shape as other wooden dice but without grooves, (3112/B7.1).

Small stick, 4.8 cm. in length, with a diameter of 1.3 cm. which had once been wrapped with a bast cord, (3112/C10.23).

2 willow combs wrapped at the upper ends with fiber cord and then covered with what appears to be pinon gum to which have been cemented bone beads, (3112/B7.56).

8 dice, incised horizontally, 2.2 cm. in length, (3112/B6.2).

(H) Clay Objects

Only one artifact of clay, other than the non-associated and later Pueblo sherds found on the cave surface, came to light in the Woodchuck Cave excavation. This was an unfired, conical, clay pipe (3112/C4.1), 3.7 cm. long and 3.2 cm. at its widest diameter. It was formed of a greyish white clay, with no apparent temper.

(J) Comparative Data

While the majority of material items from Woodchuck Cave corresponded generally to those described from other Basketmaker II sites, it will be of value to record several of these in detail.

Basketry recovered at N.A. 3112, primarily of two-rod-and-bundle, triangular foundation resembled the majority of Basketmaker II pieces so far reported with the single exception of a two-rod specimen. Nusbaum[7] remarked that only four of thirty baskets from Du Pont Cave were not two-rod-and-bundle, while Kidder and Guernsey[8] described a single-rod example. Both Nusbaum[9] and Guernsey[10] commented that many baskets had been "killed," an occurrence which was not in evidence at Woodchuck Cave. No examples of interlocking stitches were observed. Although in few of Nusbaum's[11] specimens was the foundation visable between stitches, many of those from the excavations of Guernsey and Kidder[12] were so constructed and the latter situation agrees with our finds. The only other examples of wine-red dyed baskets were mentioned by Nusbaum, who said: "The design is visable only on the exterior, the inside being colored dark wine-red; this may be paint or possibly an effect of decomposition (we have noticed a dark-red stain on several semi-decayed specimens from other Basket-maker caves)."[13] It will be remembered that the similar specimen from Woodchuck Cave, which appeared to have been painted, was colored on both exterior and interior. Pepper's published Grand Gulch data,[14] unfortunately, were not in sufficient detail to permit comparison.

Fur robes seem to be commonplace in sites from this period; the methods employed in their manufacture and their use as burial garments at N.A. 3112 conform to previously published descriptions. Feather tassels, however, are so far reported from only one other location.[15] Sandals were square-toed and could be placed in Kidder's and Guernsey's type III a.[16] Haury[17] illustrates a similar finely woven sandal from the Basketmaker level of Painted Cave but unfortunately the toe is missing.

7. Nusbaum, 122, p. 90.
8. Kidder and Guernsey, 1919, p. 168.
9. Nusbaum, 1922, p. 92.
10. Guernsey, 1931, p. 70.
11. Nusbaum, 1922, p. 91.
12. Guernsey and Kidder, 1921, p. 60.
13. Nusbaum, 1922, p. 92.
14. Pepper, 1902.
15. Kidder and Guernsey, 1919, p. 175.
16. Kidder and Guernsey, 1919, p. 159.
17. Haury, 1945, Plate 17G and p. 42.

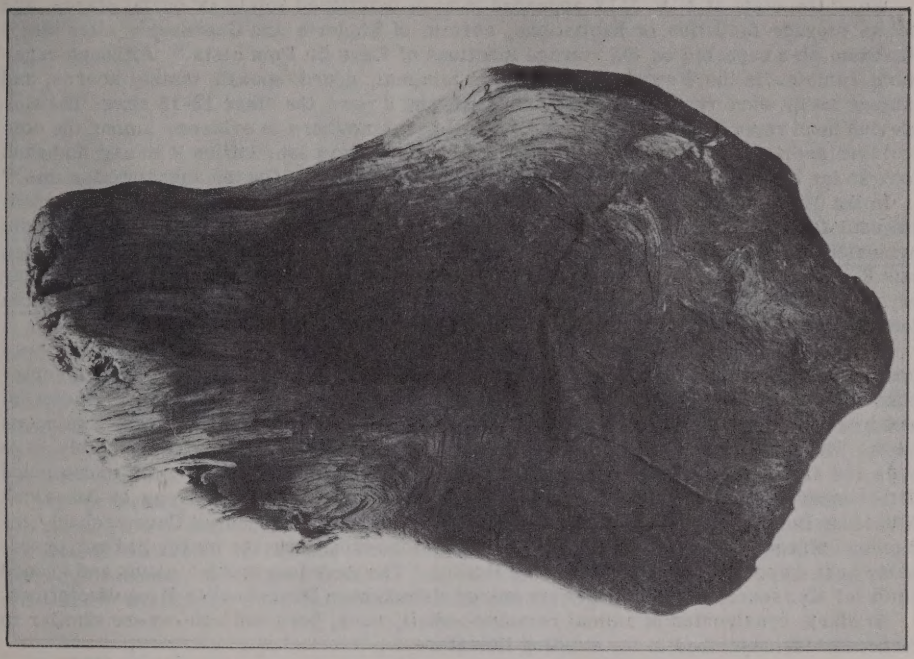


Fig. 17. Juniper wood Ladle, (3112/M8). Length 16.4 cm.

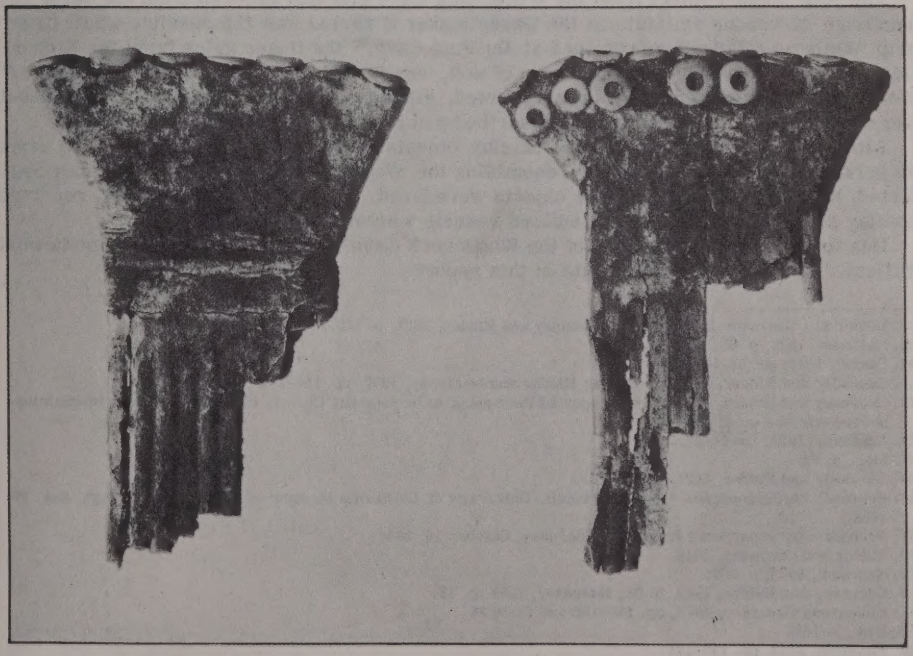


Fig. 18. Wooden Combs from Woodchuck Cave.

While the cists at N.A. 3112 appeared to have functioned solely as burial places, and not as storage facilities or habitations, certain of Kidder's and Guernsey's sites did;[18] Nusbaum also reported on the storage functions of Cave Du Pont cists.[19] Although vegetable remains in the Woodchuck Cave were minimal, gourd, squash, maize, acorns, and juniper seeds were represented. One corn cob had 8 rows, the other 12-13 rows. The single red bean reportedly uncovered in Cist No. 8, but nowhere in evidence among the collections (see note 2), unfortunately cannot be given consideration. Suffice it to say, no beans have so far been reported from other Basketmaker II sites and Carter substantiates this.[20]

In the Kidder and Guernsey series[21] the following vegetable materials are recorded: tropical flint corn, acorns, pinon nuts, grass seeds (both Coreocarpus and Oryzopsis hymeniodes), and squash (Cucurbita moschata).[22] Nusbaum[23] reported corn (none of which was 8-rowed), squash (species not identified but probably moschata), acorns (which may or may not have been used as food), sunflower (Helianthus sp.) and grass (Chenopodium fremonti Wats., and Ephedra) seeds from the Du Pont Cave cists.

Among the animal remains of Woodchuck Cave the deer, jack rabbit and beaver, reported from Cave Du Pont,[24] were absent; nor was there evidence of the following vertebrates discovered by Guernsey and Kidder:[25] dog, badger, owl, warblers, bluebirds, woodpeckers, Hutchins (?) wild goose, red-tailed hawk, Greater Yellowlegs, Swainsons hawk. The woodchuck remains, from which N.A. 3112 took its name, may possibly have been the first record from Arizona,[26] although Guernsey writes[27] of some unpublished data concerning possible woodchuck bones from sites reported in Bureau of American Ethnology Bulletin 65.[28] The presence of turkey remains at Woodchuck Cave probably indicates infrequent hunting of this bird, and not domestication; the turkey has not previously been reported from Basketmaker II sites. The grey fox, spotted skunk and ground squirrel also seem not to have been uncovered elsewhere in Basketmaker II manifestations.

Artifacts constructed of animal remains--shell, bone, horn and skin--were similar to those already described in the existing literature.

While there appeared to be a preponderance of mineral pigments at N.A. 3112, stone objects such as pipes, dart points, and paint manos corresponded to previously published descriptions.

The sole wooden object from the Woodchuck Cave site that differed from the usual assemblage of wooden artifacts in the Basketmaker II period was the possible atlatl finger grip. While no atlatls were obtained at Du Pont Cave,[29] the finger grips from the Kidder-Guernsey excavations, however, were of soft, heavy, dressed hide, folded lengthwise.[30] Wooden dice have previously been reported, although the eight (B6.2) found in a basket were very similar to the bone dice described and pictured by Kidder and Guernsey.[31]

Although there exists a paucity of clay objects in Basketmaker II levels, the same authors reported two clay pipes resembling the Woodchuck cave specimen;[32] they neglected, however, to state if these objects were fired. Nusbaum, in this regard, reported no clay pipes, but parts of three unfired vessels with no apparent temper.[33]

Due to the absence of crania of the Woodchuck Cave skeletal material, it is somewhat difficult to effect comparative data in this report.

---

18. Kidder and Guernsey 1919, p. 206; Guernsey and Kidder, 1921, p. 110.
19. Nusbaum, 1922, p. 66.
20. Carter, 1945, pp. 56-73, 120.
21. Guernsey and Kidder, 1921, pp. 41-44; Kidder and Guernsey, 1919, pp. 154-156.
22. Guernsey and Kidder, 1921, p. 42, reported the squash to be pepo but Carter, 1945, p. 20, said a re-examination proved this was moschata.
23. Nusbaum, 1922, pp. 66-67.
24. Ibid., p. 72.
25. Guernsey and Kidder, 1921, pp. 44-45.
26. Personal correspondence from J. Grinnell, University of California Museum of Vertebrate Zoology, Aug. 29, 1934.
27. Personal correspondence from S. J. Guernsey, October 16, 1934.
28. Kidder and Guernsey, 1919.
29. Nusbaum, 1922, p. 107.
30. Guernsey and Kidder, 1921, p. 81; Guernsey, 1931, p. 71.
31. Kidder and Guernsey, 1919, pp. 189-190 and Plate 86.
32. Ibid., p. 188.
33. Nusbaum, 1922, pp. 138-144.

Chapter V

CONCLUSIONS

Woodchuck Cave was an almost pure burial site of the Basketmaker II stage in the San Juan drainage. In the Colton classification it would be placed in the Whitedog Focus of the Kayenta Branch.[34]

There is every evidence that the burials were disturbed at an unknown period in the past when the crania and many of the long bones of the legs were removed and artifacts from the different burials mixed. Whoever deranged the cists appears not to have been seeking jewelry and other ornaments but merely the aforementioned skeletal parts. Although the crania of all infants recovered were intact, all adult skeletons were lacking skulls and in only four of the latter were the mandibles in evidence. Furthermore, a fire in the rear of the cave seems to have consumed one or more of the bodies as well as basketry and other perishable material.

The preceding comparative section of this report demonstrates the similarities of Woodchuck Cave material culture with that recovered from other Basketmaker II sites previously excavated in the San Juan region. One, therefore, would expect them to be contemporaneous. Since Du Pont Cave has been dated by Stallings by a piñon pine cut in A.D. 217,[35] Woodchuck Cave can be dated A.D. 200 $\pm$ 100 years.

34. Colton, 1939, p. 52.
35. Stallings, 1941, p. 3.

BIBLIOGRAPHY

Carter, George F. "Plant Geography and Culture History in the American Southwest." Viking Fund Publications in Anthropology, Number Five. (New York: 1945.)

Colton, Harold S. "Prehistoric Culture Units and Their Relationships in Northern Arizona." Museum of Northern Arizona Bulletin 17. (Flagstaff: 1939.)

Guernsey, Samuel James. "Explorations in Northeastern Arizona." Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University, vol. XII, no. 1. (Cambridge: 1931.)

Guernsey, Samuel James and Alfred Vincent Kidder. "Basket-Maker Caves of Northeastern Arizona." Papers of the Peabdoy Museum of American Archaeology and Ethnology, Harvard University, Vol. VIII, no. 2. (Cambridge: 1921.)

Haury, Emil W. "Painted Cave, Northeastern Arizona." No. 3. (Dragoon, Arizona: The Amerind Foundation, Inc., 1945.)

Kidder, Alfred Vincent and Samuel J. Guernsey. "Archeological Explorations in Northeastern Arizona." Smithsonian Institution, Bureau of American Ethnology, Bulletin 65. (Washington: Government Printing Office, 1919.)

Nusbaum, Jesse L. "A Basket-Maker Cave in Kane County, Utah." Indian Notes and Monographs. (New York: Museum of the American Indian, Heye Foundation, 1922.)

Pepper, George H. "The Ancient Basket Makers of Southeastern Utah." American Museum Journal, vol. 2, no. 4, guide leaflet 6. (New York: American Museum of Natural History, 1902.)

Stallings, W. S. "A Basket Maker II Date from Cave Dupont, Utah." Tree Ring Bulletin, vol. 8, no. 1. (July, 1941.)

INDEX

Acorns, 20, 30
Antelope, 20
Atlatls, 9, 11, 25, 26, 30

Bartlett, Katharine, iii
Baskets, 3, 6, 7, 9, 10, 11, 15-17, 28
Beads
  acorn, 7, 18
  bone, 9, 19
  horn, 7, 19
  lignite, 6, 9, 18, 26
  olivella, 6, 7, 9, 10, 18
Bone awls, 9, 11, 19, 20

Cists
  Number 1. . . 3
  Number 2. . . 3, 6
  Number 3. . . 6
  Number 4. . . 6
  Number 5. . . 6, 7
  Number 6. . . 7
  Number 7. . . 7, 9, 10
  Number 8. . . 10
  Number 9. . . 10
  Number 10. . . 10
  Number 11. . . 11
  Number 12. . . 11
  Number 13. . . 11
  Number 14. . . 11
  Number 15. . . 11
Colton, Harold S., iii, 31
Combs, 9, 28, 29
Corn, 20, 30
Cottontail rabbit, 20

Dice, 7, 9, 19, 28
Dogoszhi Biko, 1
Drills, 9, 24, 26
DuPont Cave, 28, 30, 31

Euler, Robert C., iii

Fox, 20, 30
Fur Cord, 3, 6, 17
Fur Robes, 3, 6, 7, 9, 17, 28

Gopher, 20
Gourds, 7, 20
Grand Gulch, 28
Grinnell, J., iii
Guernsey, S. J., 28, 30

Hall, Ansel, iii
Hargrave, Lyndon L., iii, 1
Haury, E. W., 28
Heineman, R. S., iii
Human skeletal remains, 12-14, 30

Jones, Volney, iii, 20
Juniper seeds, 20

Kayenta Branch, 31
Kidder, A. V., 28, 30

Lockett, Claiborne, iii, 1

Mountain sheep, 20

Nusbaum, J. L., 28, 30

Painted Cave, 28
Paint pigments, 3, 9, 23, 30
Pepper, G. H., 28
Pipes
  clay, 6, 25, 28, 30
  stone, 9, 25, 26
Prairie dog, 20
Projectile points, 9, 11, 24, 26, 30

Rainbow Bridge-Monument Valley Expedition, iii, 1
Russell, W. C., iii

Sandals, 3, 7, 10, 17, 28
San Juan, 31
Scoop, 26
Scrapers, 9, 24, 26
Skin bags, 3, 6, 7, 23
Skunk, 20, 30
Squash, 20, 30
Squirrel, 20, 30

Teall, Ralph, iii
Tsegi Canyons, 1
Turkey, 20, 30
Twin Caves Pueblo, 1, 2

Water Lily Canyon, 1
Western horned owl, 20
Whitedog Focus, 31
Whitford, A. C., iii, 26
Williams, Cecil, iii
Woodchuck, 20, 30

Yucca cord, 3, 6, 7, 9, 10, 11